

## Supplementary Material

### S.1 TRAINING DETAILS AND HYPER-PARAMETERS

#### S.1.1 Hyper-parameter Search for the MCCNN

The hyper-parameters for the Multi-Channel Convolutional Neural Network (MCCNN) are tuned by conducting a grid-search over different parameter settings by optimising the model for arousal-valence prediction. The search space for the hyper-parameter tuning can be seen in Table S1.

**Table S1.** Search space used for hyper-parameter optimisation for the MCCNN model.  $\mathcal{U}$  denotes a uniform distribution sampled between the given minimum and maximum value.

| Parameter           | Value                           | Parameter            | Value                                 |
|---------------------|---------------------------------|----------------------|---------------------------------------|
| Batch Size          | <i>choice</i> (20, 50, 64, 128) | MCCNN FC Layer Units | <i>choice</i> (128, 200, 256, 512)    |
| Learning Rate       | $\mathcal{U}(0.001, 0.0001)$    | Optimizer            | <i>choice</i> (adam, adamax, rmsprop) |
| Vision Channel      |                                 | Speech Channel       |                                       |
| Layer1: Filter Maps | <i>choice</i> (8, 16, 32)       | Layer1: Filter Maps  | <i>choice</i> (8, 16, 32)             |
| Layer1: Filter Size | <i>choice</i> (5, 7, 9)         | Layer1: Filter Size  | <i>choice</i> (5, 7, 9, 10)           |
| Layer2: Filter Maps | <i>choice</i> (8, 16, 32)       | Layer2: Filter Maps  | <i>choice</i> (8, 16, 32)             |
| Layer2: Filter Size | <i>choice</i> (5, 7, 9)         | Layer2: Filter Size  | <i>choice</i> (5, 7, 9, 10)           |
| FC Layer Units      | <i>choice</i> (128, 256, 512)   | FC Layer Units       | <i>choice</i> (128, 256, 512)         |
| Dropout-Rate        | $\mathcal{U}(0, 1)$             | Dropout-Rate         | $\mathcal{U}(0, 1)$                   |

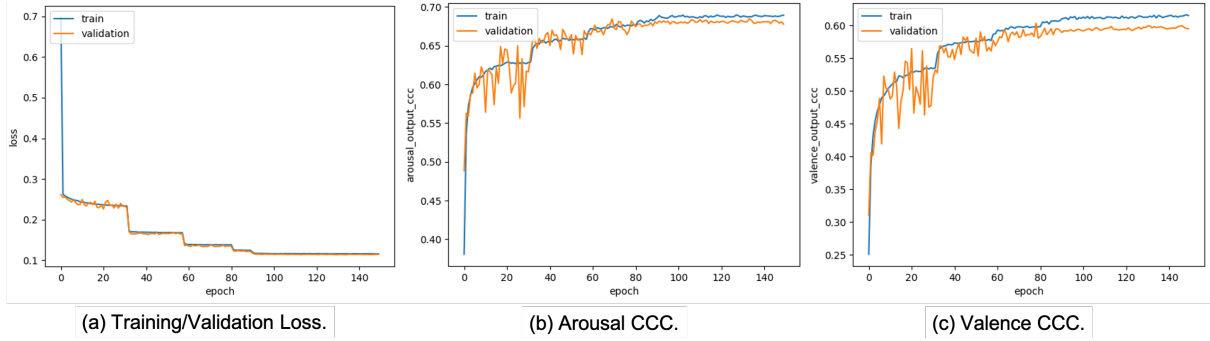
Each parameter permutation was run 10 times to account for the random seed and best performing parameter settings were selected. The selected hyper-parameters for the MCCNN model can be seen in Table S2.

**Table S2.** Selected Hyper-Parameters for the MCCNN Network, optimised using the Hyperopt python Library.

| Vision Channel |         | Audio Channel  |          | MCCNN              |               |
|----------------|---------|----------------|----------|--------------------|---------------|
| Layer 1        |         | Layer 1        |          | Epochs             | 200           |
| Filter Maps    | 32      | Filter Maps    | 32       | Batch Size         | 64            |
| Filter Size    | (9 × 9) | Filter Size    | (9 × 10) | Optimiser          | Adam          |
| Regularisation | L1-Norm | Regularisation | L1-Norm  | Learning Rate      | 0.001         |
| Dropout-Rate   | 0.5     | Dropout-Rate   | 0.5      | Weight Initialiser | Glorot Normal |
| Max-Pooling    | (2 × 2) | Max-Pooling    | (2 × 2)  | FC Layer Units     | 200           |
| Layer 2        |         | Layer 2        |          | Activation         | ReLU          |
| Filter Maps    | 32      | Filter Maps    | 32       |                    |               |
| Filter Size    | (7 × 7) | Filter Size    | (7 × 7)  |                    |               |
| Regularisation | L2-Norm | Regularisation | L2-Norm  |                    |               |
| Dropout-Rate   | 0.5     | Dropout-Rate   | 0.5      |                    |               |
| Max-Pooling    | (2 × 2) | Max-Pooling    | (2 × 2)  |                    |               |
| FC Layer       |         | FC Layer       |          |                    |               |
| Units          | 512     | Units          | 512      |                    |               |

### S.1.2 Training the Face-Channel

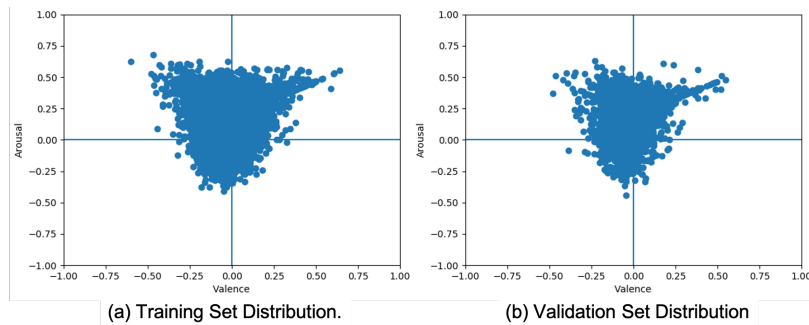
The Face-channel of MCCNN is pre-trained on the Aff-Wild and AFEW-VA datasets with normalised arousal-valence labels  $\in [-1, 1]$  for each frame. The training/validation loss dynamics and model performance in terms of the Concordance Correlation Coefficient (CCC) scores is shown in Figure S1. As can be seen, the model achieves competitive validation CCC scores of **0.68** for *arousal* and **0.57** for *valence*.



**Figure S1.** Training and Validation Loss, and Model Performance in terms of Arousal and Valence CCC scores for Face Channel Pre-training.

### S.1.3 Training the MCCNN

The Face-channel is used to label the SAVEE and RAVDESS datasets in terms of the arousal-valence values ( $\in [-1, 1]$ ) they represent. The resultant training and validation distributions can be seen in Figure S2.

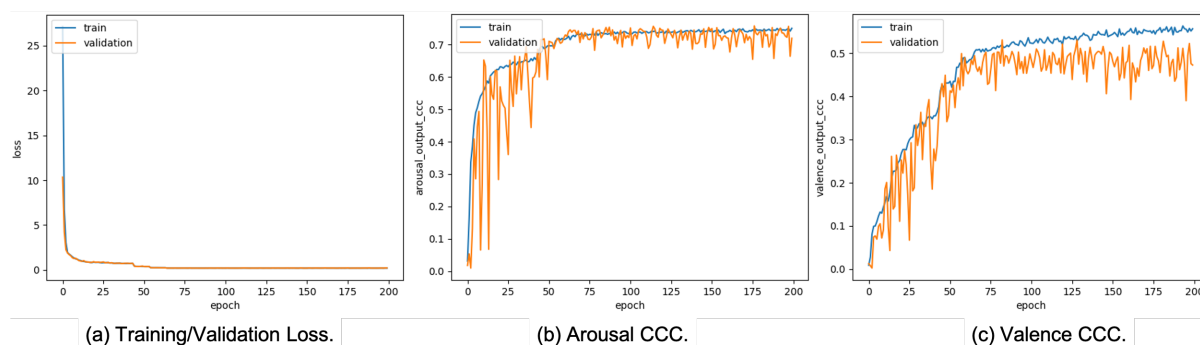


**Figure S2.** Training and Validation Data Distribution for Training the MCCNN.

The MCCNN is then trained on this data for 200 epochs with the *Adam* optimiser converging to CCC scores of **0.75** for *arousal* and **0.53** for *valence*. The training/validation loss dynamics and model performance in terms of CCC scores can be seen in Figure S3.

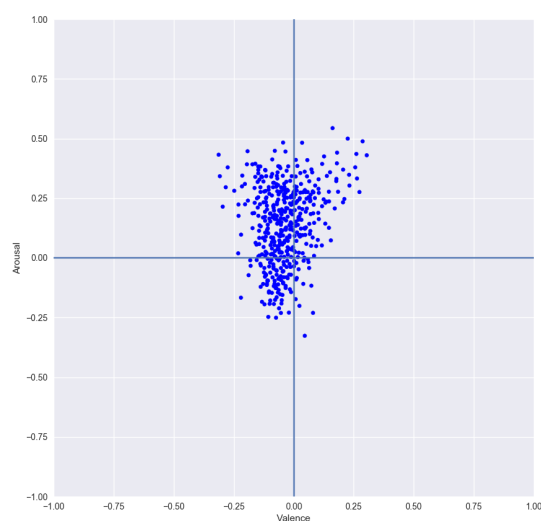
### S.1.4 Training the Perception-GWR

The trained MCCNN network acts as a multi-modal feature extractor. The extracted training-set features are then used to pre-train the Perception-Growing-When-Required (GWR) model in an unsupervised manner. The Perception-GWR learns robust feature prototypes to adequately represent the training set, mitigating the effect of spurious outliers. The PCA-plot for the learnt feature representations, encoded into



**Figure S3.** Training and Validation Loss, and Model Performance in terms of Arousal and Valence CCC scores for MCCNN Training.

the arousal-valence values each neuron represents, can be seen in Figure S4 that learns feature prototypes for the training data distribution seen in Figure S2 (a).



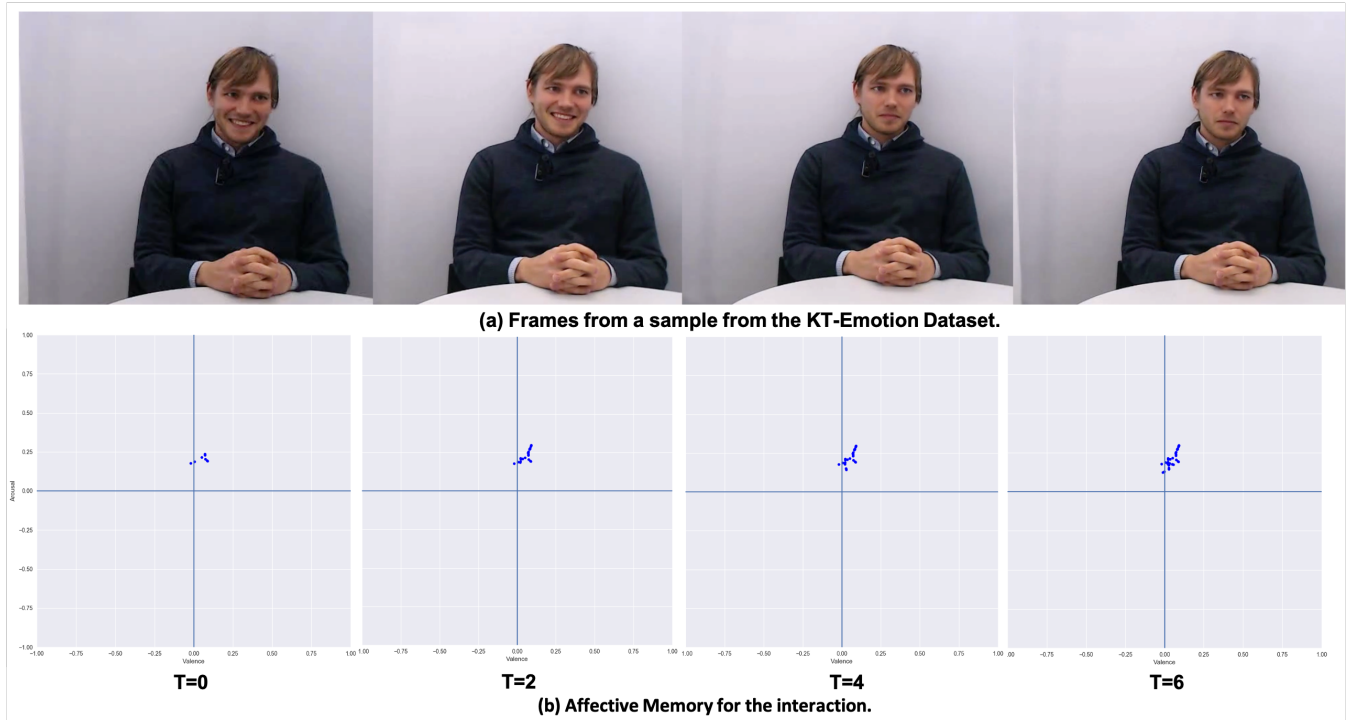
**Figure S4.** The Perception-GWR encoding feature representations extracted from the training data using the MCCNN.

### S.1.5 Training Affective Memory Gamma-GWR

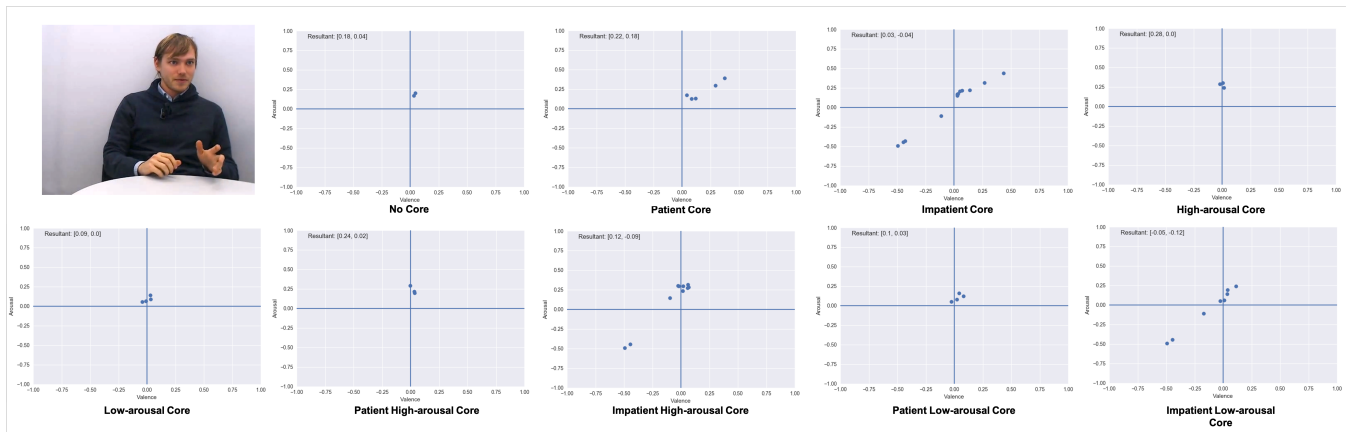
For each user interacting with the robot, it must create a separate affective memory representing past interactions with the user. BMUs from the Perception-GWR are used to train the Mood Gamma-GWR, setting the Gamma-filtering (temporal context)  $K = 10$ . An example of the Affective Memory Gamma-GWR training on a video sample from the KT-Emotion dataset can be seen in Figure S5.

### S.1.6 Training Mood Gamma-GWR

The Mood of the robot represents its intrinsic affective response towards the user based on its perception of the user as well as intrinsic factors such as its affective memory as well as its inherent affective core dispositions. As can be seen in Figure S6, given the inherent affective core of the robot, the same affective stimuli can be experienced differently, resulting in a significantly different *mood* for the robot.



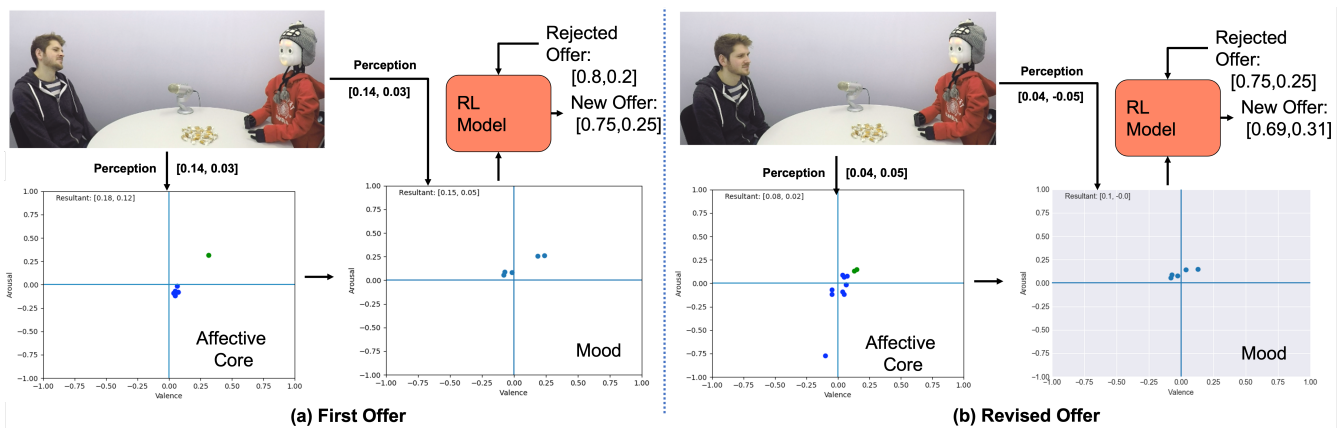
**Figure S5.** The Affective Memory Gamma-GWR grows as the agent interacts with the user over time.



**Figure S6.** Robot's Mood under different Affective Core dispositions for the same affective input.

### S.1.7 Learning Negotiating Behaviour

At any given time during the interaction, the robot observes the facial expressions as well as the speech of the participants to evaluate their affective response towards the robot's offer. The facial expressions and speech signals are processed using the MCCNN architecture (see Section 3.1.1 of the manuscript) and the extracted multi-modal feature vectors are used to encode feature prototypes using the Perception-GWR model. These feature prototypes are then encoded into arousal-valence values (see Section 3.1.2 of the manuscript) to represent the current perception of the robot. This current perception, modulated by different intrinsic and extrinsic factors influences the robot's mood, which is again summarised in terms of arousal and valence values (see Section 3.3 of the manuscript). These arousal-valence values and the previously



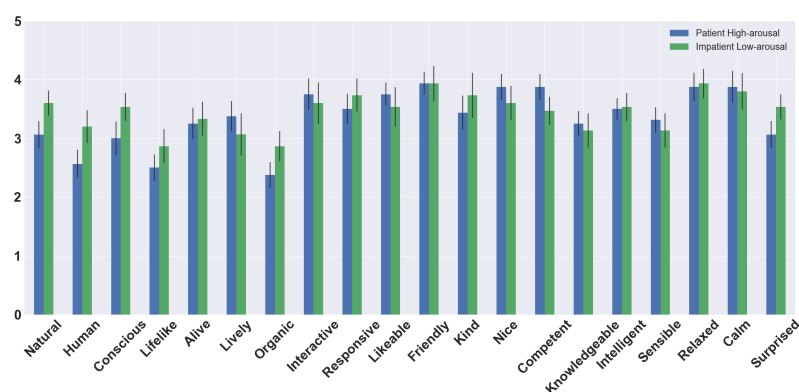
**Figure S7.** Robot Learning to Revise its offer based on the participants' affective behaviour during the interactions, modulated by its affective core.

rejected offer are used to generate an update on the previous offer, resulting in a new offer made to the participant (see Section 3.4.2 of the manuscript). Figure S7 illustrates how the robot updates its offer to the participant, based on the rejected offer as well as their affective behaviour towards the robot.

## S.2 ADDITIONAL RESULTS FROM THE USER STUDY

### S.2.1 GODSPEED Results

The GODSPEED test is used to measure a participants' impressions of the robot on criteria like anthropomorphism, animacy, likeability, perceived intelligence and perceived safety. Each dimension of the questionnaire can be independently evaluated to get a deeper understanding of the participants' impressions of the robot. The means and the 95% confidence intervals for each of the dimensions comparing the two measured conditions can be found in Figure S8. The results of the one-sided Mann-Whitney U test conducted on individual dimensions can be seen in Table S3.



**Figure S8.** GODSPEED test results with means and 95% confidence intervals for individual dimensions comparing the Patient High-arousal condition with the Impatient Low-arousal condition.

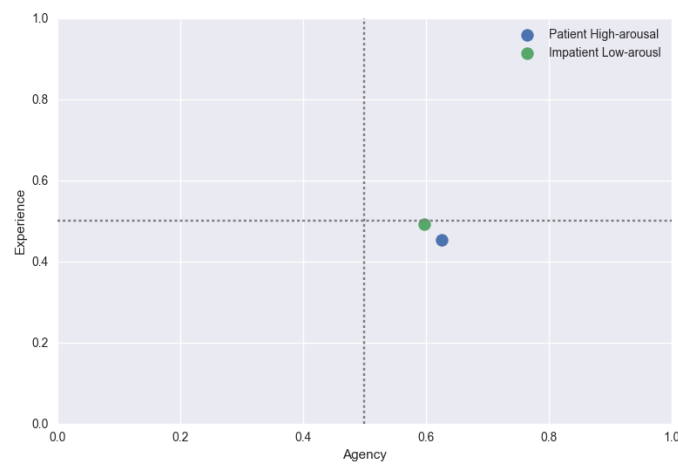
### S.2.2 Mind-Perception Results

Based on the participants evaluating the robot on factors such as experiencing *fear*, exercising *self-control*, feeling *pleasure*, remembering the participant, feeling *hunger* and acting *morally*, the agency

**Table S3.** Results of the one-sided Mann-Whitney U test evaluating the GODSPEED test results with the alternative hypothesis that the Impatient low-arousal condition was rated higher.

| Dimension   | U Statistic | p-value | Dimension     | U Statistic | p-value |
|-------------|-------------|---------|---------------|-------------|---------|
| Natural     | 154.5       | 0.076   | Friendly      | 129.0       | 0.362   |
| Human       | 158.0       | 0.053   | Kind          | 144.5       | 0.163   |
| Conscious   | 158.0       | 0.061   | Nice          | 106.5       | 0.721   |
| Lifelike    | 142.0       | 0.181   | Competent     | 92.5        | 0.882   |
| Alive       | 124.0       | 0.442   | Knowledgeable | 112.0       | 0.638   |
| Lively      | 103.0       | 0.762   | Intelligent   | 123.5       | 0.449   |
| Organic     | 155.0       | 0.075   | Sensible      | 107.5       | 0.705   |
| Interactive | 116.5       | 0.565   | Relaxed       | 124.5       | 0.434   |
| Responsive  | 138.0       | 0.236   | Calm          | 117.0       | 0.557   |
| Likeable    | 115.0       | 0.591   | Surprised     | 153.0       | 0.081   |

and experience exhibited by the robot under different conditions are concluded. The mind-perception evaluation for the robot under the Patient High-arousal and the Impatient low-arousal conditions can be seen in Figure S9. No significant difference can be concluded between the two conditions for either *agency* of *experience* dimensions, as can be seen in Table S4.

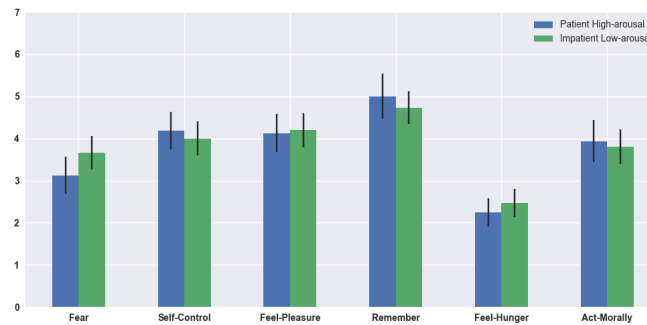


**Figure S9.** Mind Perception results comparing the Patient High-arousal and Impatient Low-arousal conditions on Agency and Experience scales.

**Table S4.** Results of the one-sided Mann-Whitney U test evaluating the Mind Perception results for Agency and Experience with the alternative hypothesis that the Impatient low-arousal condition was rated higher.

| Dimension  | U Statistic | p-value |
|------------|-------------|---------|
| Agency     | 103.5       | 0.75    |
| Experience | 133.0       | 0.31    |

For a post-hoc analysis of the results, the individual dimensions (see Figure S10) are compared resulting in no significant difference found between either condition (see Table S5).



**Figure S10.** Mind Perception test results with means and 95% confidence intervals for individual dimensions comparing in the Patient High-arousal condition with the Impatient Low-arousal condition.

**Table S5.** Results of the one-sided Mann-Whitney U test evaluating the Mind Perception test results for individual dimension with the alternative hypothesis that the Impatient low-arousal condition was rated higher.

| Dimension     | U Statistic | p-value |
|---------------|-------------|---------|
| Fear          | 145.0       | 0.161   |
| Self-Control  | 111.5       | 0.641   |
| Feel-Pleasure | 121.5       | 0.484   |
| Remember      | 101.0       | 0.783   |
| Feel-Hunger   | 133.5       | 0.297   |
| Act-Morally   | 114.5       | 0.595   |

### S.3 NEGOTIATIONS UNDER DIFFERENT CONDITIONS

In this section, we provide details regarding the negotiations between the robot and the participants under different conditions. First, we present (see Figure S11) how all the 31 participants negotiated with the robot under the baseline No Core condition. Green cells represent the offers accepted by the participants while red cells denote the offer being rejected. Here, it can be seen that different participants follow distinct negotiating behaviours with the robot where some participants negotiate a hard bargain while others are willing to accept much lower offers from the robot.

Similarly, in Figure S12, we see the negotiating behaviours of 16 participants that interacted with the Patient High-arousal robot. Here, on average, participants take longer (a higher number of negotiation rounds) to negotiate a split of resources with the robot as the robot drives a hard bargain, trying to keep a majority of the resources for itself.

Finally, Figure S13 presents the negotiating behaviours of 15 other participants that interacted with the Impatient Low-arousal robot. We can see that here, the average number of negotiations is lower than other conditions denoting that the robot was able to negotiate a split with the participants much quicker while also offering them a higher split.

**Figure S11.** Participant negotiations with the robot under the baseline No Core condition.

[illegible]



**Figure S12.** Participant negotiations with the robot under the Patient High-arousal condition.

| Subject | Offer 1 |      | Offer 2 |      | Offer 3 |      | Offer 4 |      | Offer 5 |      | Offer 6 |      | Offer 7 |      | Offer 8 |      | Offer 9 |      | Offer 10 |      | Offer 11 |      | Offer 12 |      | Offer 13 |      | Offer 14 |      | Offer 15 |      | Offer 16 |      | Offer 17 |      | Offer 18 |      | Offer 19 |      | Offer 20 |      |      |      |      |      |
|---------|---------|------|---------|------|---------|------|---------|------|---------|------|---------|------|---------|------|---------|------|---------|------|----------|------|----------|------|----------|------|----------|------|----------|------|----------|------|----------|------|----------|------|----------|------|----------|------|----------|------|------|------|------|------|
|         | Rob     | Part | Rob     | Part | Rob     | Part | Rob     | Part | Rob     | Part | Rob     | Part | Rob     | Part | Rob     | Part | Rob     | Part | Rob      | Part | Rob      | Part | Rob      | Part | Rob      | Part | Rob      | Part | Rob      | Part | Rob      | Part | Rob      | Part | Rob      | Part | Rob      | Part | Rob      | Part |      |      |      |      |
| P1      | 0.8     | 0.2  | 0.74    | 0.26 | 0.69    | 0.31 | 0.64    | 0.36 | 0.59    | 0.41 | 0.52    | 0.48 | 0.51    | 0.49 | 0.51    | 0.49 | 0.5     | 0.5  | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —    | —    | —    | —    |
| P2      | 0.9     | 0.1  | 0.86    | 0.14 | 0.82    | 0.18 | 0.77    | 0.23 | 0.72    | 0.28 | 0.66    | 0.34 | 0.62    | 0.38 | 0.56    | 0.44 | 0.52    | 0.48 | 0.5      | 0.5  | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —    | —    | —    |      |
| P5      | 0.9     | 0.1  | 0.86    | 0.14 | 0.81    | 0.19 | 0.76    | 0.24 | 0.71    | 0.29 | 0.66    | 0.34 | 0.6     | 0.4  | 0.55    | 0.45 | 0.51    | 0.49 | 0.51     | 0.49 | 0.5      | 0.5  | 0.5      | 0.5  | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.5  | 0.5  |      |      |
| P8      | 0.8     | 0.2  | 0.75    | 0.25 | 0.7     | 0.3  | 0.65    | 0.35 | 0.6     | 0.4  | 0.55    | 0.45 | 0.52    | 0.48 | 0.51    | 0.49 | 0.51    | 0.49 | 0.51     | 0.49 | 0.5      | 0.5  | 0.5      | 0.5  | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51 | 0.49 | 0.51 | 0.49 |
| P10     | 0.9     | 0.1  | 0.84    | 0.16 | 0.79    | 0.21 | 0.74    | 0.26 | 0.69    | 0.31 | 0.64    | 0.36 | 0.59    | 0.41 | —       | —    | —       | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —    | —    | —    |      |
| P12     | 0.8     | 0.2  | 0.75    | 0.25 | 0.72    | 0.28 | 0.67    | 0.33 | 0.62    | 0.38 | 0.57    | 0.43 | 0.56    | 0.44 | —       | —    | —       | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —    | —    | —    |      |
| P14     | 0.9     | 0.1  | 0.84    | 0.16 | 0.79    | 0.21 | 0.74    | 0.26 | 0.68    | 0.32 | 0.64    | 0.36 | 0.59    | 0.41 | —       | —    | —       | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —    | —    | —    |      |
| P16     | 0.9     | 0.1  | 0.85    | 0.15 | 0.8     | 0.2  | 0.74    | 0.26 | 0.69    | 0.31 | 0.64    | 0.36 | 0.59    | 0.41 | 0.54    | 0.46 | 0.51    | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.5      | 0.5  | 0.51     | 0.49 | 0.5      | 0.5  | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51 | 0.49 | 0.51 | 0.49 |
| P18     | 0.8     | 0.2  | 0.74    | 0.26 | 0.69    | 0.31 | 0.63    | 0.37 | —       | —    | —       | —    | —       | —    | —       | —    | —       | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —    | —    | —    | —    |
| P19     | 0.9     | 0.1  | 0.84    | 0.16 | 0.79    | 0.21 | 0.74    | 0.26 | 0.68    | 0.32 | 0.63    | 0.37 | 0.58    | 0.42 | 0.53    | 0.47 | 0.51    | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.5      | 0.5  | 0.5      | 0.5  | 0.49     | 0.51 | 0.49     | 0.51 | 0.49     | 0.51 | 0.49     | 0.51 | 0.49     | 0.51 | 0.49     | 0.51 | 0.49     | 0.51 | 0.49 | 0.51 | 0.49 |      |
| P20     | 0.8     | 0.2  | 0.75    | 0.25 | 0.69    | 0.31 | 0.64    | 0.36 | 0.6     | 0.4  | 0.55    | 0.45 | 0.51    | 0.49 | 0.5     | 0.5  | 0.5     | 0.5  | 0.5      | 0.5  | 0.49     | 0.51 | 0.49     | 0.51 | 0.49     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51 | 0.49 | 0.51 | 0.49 |
| P22     | 0.9     | 0.1  | 0.86    | 0.14 | 0.82    | 0.18 | 0.76    | 0.24 | 0.71    | 0.29 | 0.65    | 0.35 | 0.61    | 0.39 | 0.56    | 0.44 | —       | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —    | —    | —    | —    |
| P25     | 0.8     | 0.2  | 0.74    | 0.26 | 0.68    | 0.32 | —       | —    | —       | —    | —       | —    | —       | —    | —       | —    | —       | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —    | —    | —    | —    |
| P27     | 0.8     | 0.2  | 0.76    | 0.24 | 0.7     | 0.3  | 0.66    | 0.34 | 0.61    | 0.39 | 0.56    | 0.44 | 0.51    | 0.49 | 0.52    | 0.48 | 0.51    | 0.49 | 0.51     | 0.49 | 0.5      | 0.5  | 0.5      | 0.5  | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51 | 0.49 | 0.51 | 0.49 |
| P29     | 0.9     | 0.1  | 0.85    | 0.15 | 0.8     | 0.2  | 0.75    | 0.25 | 0.7     | 0.3  | 0.65    | 0.35 | 0.6     | 0.4  | 0.55    | 0.45 | 0.51    | 0.49 | 0.52     | 0.48 | 0.51     | 0.49 | 0.52     | 0.48 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51     | 0.49 | 0.51 | 0.49 | 0.51 | 0.49 |
| P31     | 0.9     | 0.1  | 0.84    | 0.16 | 0.78    | 0.22 | 0.73    | 0.27 | 0.68    | 0.32 | 0.63    | 0.37 | 0.58    | 0.42 | —       | —    | —       | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —        | —    | —    | —    | —    | —    |

**Figure S13.** Participant negotiations with the robot under the Impatient Low-arousal condition.

| Subject | Offer 1  | Offer 2  | Offer 3  | Offer 4  | Offer 5  | Offer 6  | Offer 7  | Offer 8  | Offer 9  | Offer 10 | Offer 11 | Offer 12 | Offer 13 | Offer 14 | Offer 15 | Offer 16 | Offer 17 | Offer 18 | Offer 19 | Offer 20 |
|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
|         | Rob Part | Rob Part | Rob Part | Rob Part | Rob Part | Rob Part | Rob Part | Rob Part | Rob Part | Rob Part | Rob Part | Rob Part | Rob Part | Rob Part | Rob Part | Rob Part | Rob Part | Rob Part | Rob Part | Rob Part |
| P3      | 0.8      | 0.2      | 0.75     | 0.25     | 0.71     | 0.29     | 0.66     | 0.34     | 0.62     | 0.38     | 0.51     | 0.49     | 0.52     | 0.48     | 0.52     | 0.48     | 0.52     | 0.48     | 0.52     | 0.48     |
| P4      | 0.8      | 0.2      | 0.75     | 0.25     | 0.7      | 0.3      | 0.65     | 0.35     | 0.54     | 0.46     | 0.52     | 0.48     | 0.52     | 0.48     | 0.52     | 0.48     | 0.52     | 0.48     | 0.52     | 0.48     |
| P6      | 0.8      | 0.2      | 0.72     | 0.28     | 0.66     | 0.34     | 0.58     | 0.42     | 0.5      | 0.5      | 0.51     | 0.49     | 0.52     | 0.48     | 0.52     | 0.48     | 0.52     | 0.48     | 0.52     | 0.48     |
| P7      | 0.9      | 0.1      | 0.85     | 0.15     | 0.8      | 0.2      | 0.76     | 0.24     | 0.7      | 0.3      | 0.65     | 0.35     | 0.61     | 0.39     | 0.56     | 0.44     | 0.52     | 0.48     | 0.51     | 0.49     |
| P9      | 0.9      | 0.1      | 0.85     | 0.15     | 0.8      | 0.2      | 0.75     | 0.25     | 0.7      | 0.3      | 0.65     | 0.35     | 0.59     | 0.41     | 0.54     | 0.46     | 0.51     | 0.49     | 0.49     | 0.51     |
| P11     | 0.9      | 0.1      | 0.84     | 0.16     | 0.8      | 0.2      | 0.76     | 0.24     | 0.7      | 0.3      | 0.64     | 0.36     | 0.6      | 0.4      | 0.56     | 0.44     | 0.52     | 0.48     | 0.52     | 0.48     |
| P13     | 0.8      | 0.2      | 0.76     | 0.24     | 0.67     | 0.33     | 0.58     | 0.42     | 0.5      | 0.5      | 0.51     | 0.49     | 0.52     | 0.48     | 0.52     | 0.48     | 0.52     | 0.48     | 0.51     | 0.49     |
| P15     | 0.8      | 0.2      | 0.76     | 0.24     | 0.71     | 0.29     | 0.65     | 0.35     | 0.6      | 0.4      | 0.55     | 0.45     | 0.51     | 0.49     | 0.5      | 0.5      | 0.51     | 0.49     | 0.51     | 0.49     |
| P17     | 0.8      | 0.2      | 0.75     | 0.25     | 0.74     | 0.26     | 0.67     | 0.33     | 0.67     | 0.33     | 0.65     | 0.35     | 0.65     | 0.35     | 0.65     | 0.35     | 0.65     | 0.35     | 0.65     | 0.35     |
| P21     | 0.9      | 0.1      | 0.86     | 0.14     | 0.8      | 0.2      | 0.76     | 0.24     | 0.72     | 0.28     | 0.67     | 0.33     | 0.63     | 0.37     | 0.58     | 0.42     | 0.53     | 0.47     | 0.51     | 0.49     |
| P23     | 0.9      | 0.1      | 0.86     | 0.14     | 0.81     | 0.19     | 0.76     | 0.24     | 0.71     | 0.29     | 0.66     | 0.34     | 0.6      | 0.4      | 0.55     | 0.45     | 0.51     | 0.49     | 0.51     | 0.49     |
| P24     | 0.9      | 0.1      | 0.86     | 0.14     | 0.81     | 0.19     | 0.76     | 0.24     | 0.71     | 0.29     | 0.67     | 0.33     | 0.61     | 0.39     | 0.57     | 0.43     | 0.52     | 0.48     | 0.5      | 0.5      |
| P26     | 0.9      | 0.1      | 0.87     | 0.13     | 0.85     | 0.15     | 0.76     | 0.24     | 0.71     | 0.29     | 0.67     | 0.33     | 0.61     | 0.39     | 0.57     | 0.43     | 0.52     | 0.48     | 0.5      | 0.5      |
| P28     | 0.8      | 0.2      | 0.76     | 0.24     | 0.71     | 0.29     | 0.66     | 0.34     | 0.61     | 0.39     | 0.57     | 0.43     | 0.53     | 0.47     | 0.5      | 0.5      | 0.5      | 0.5      | 0.5      | 0.5      |
| P30     | 0.8      | 0.2      | 0.75     | 0.25     | 0.7      | 0.3      | 0.64     | 0.36     | 0.6      | 0.4      | 0.55     | 0.45     | 0.52     | 0.48     | 0.51     | 0.49     | 0.52     | 0.48     | 0.52     | 0.48     |